POLICY PERSPECTIVES

# HOUSING MARKET DYNAMICS AND MORTGAGE RISK

*by Richard Cooperstein*

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# OVERVIEW

The housing and housing finance markets are immensely important to most households and to major portions of the US economy. Almost limitless details are available to dig into the dynamics of these markets, but it can be difficult to clearly link myriad details to key trends. Thus, we take a high-level view of the tidal forces that have driven these markets in recent decades and should continue to do so in the years to come. **While our view is expansive, our purpose is to assess the near-term future of the housing and mortgage markets, with a focus on risk.**

Two gating issues are how well housing and consumer housing finance fit the definition of efficient markets. The more efficient the housing market, the more the economic and demographic drivers that we observe would already be incorporated into housing prices. Similar to stock prices and treasury bond prices, it would be difficult to use generally observable data to predict future movements. However, the housing market does not meet well-known requirements for efficient markets, such as a continuously traded spot market, costless storage, and mechanisms for taking short positions. How inefficient is the housing market? The opposite extreme from an efficient market would be one where there is no equilibrium housing price level or growth rate and housing prices neither respond to disequilibria nor relate to any other economic drivers. This implies that arbitrage profits could be perpetual, in that if prices happened to be higher, or growing faster, than "normal" this condition could last forever.

We believe that the housing market lies between these extremes. Our view is that the housing market is weakly efficient based on two principles: (1) Arbitrage in the housing market is not perpetual because housing prices do respond to disequilibria, and (2) there are significant transaction costs and time lags in migration patterns and how the housing stock adjusts from shrinking markets toward growing markets. Thus, we think it's reasonable that observable trends in fundamentals that haven't yet impacted supply and demand (price) could do so in the foreseeable future.

The mortgage-backed securities market is quite efficient (though fragile), but consumer access to credit and liquidity is the least efficient segment of the mortgage finance ecosystem, especially for lower income and wealth households and non-whites. This suggests that financing costs and access will measurably impact effective demand.

We begin our consideration of the housing and mortgage markets using the framework of supply, demand, and price. We look at growth trends in households, demographics, wealth and income (including federal transfers), housing supply, and housing prices. Housing is often financed whether it's owner occupied or rented out, so interest rates and credit terms should also matter, especially for consumers who have imperfect access to credit markets. In addition, climate risk has recently emerged as a widespread local issue that has become a national problem. Our analysis timeframe is decades so it will be important to distinguish between nominal and real metrics. Finally, we apply our valuation technology to assess the risk in mortgage-related assets. We summarize our findings with recent historical trends and forward-looking risks.

**Recent Historical Trends**

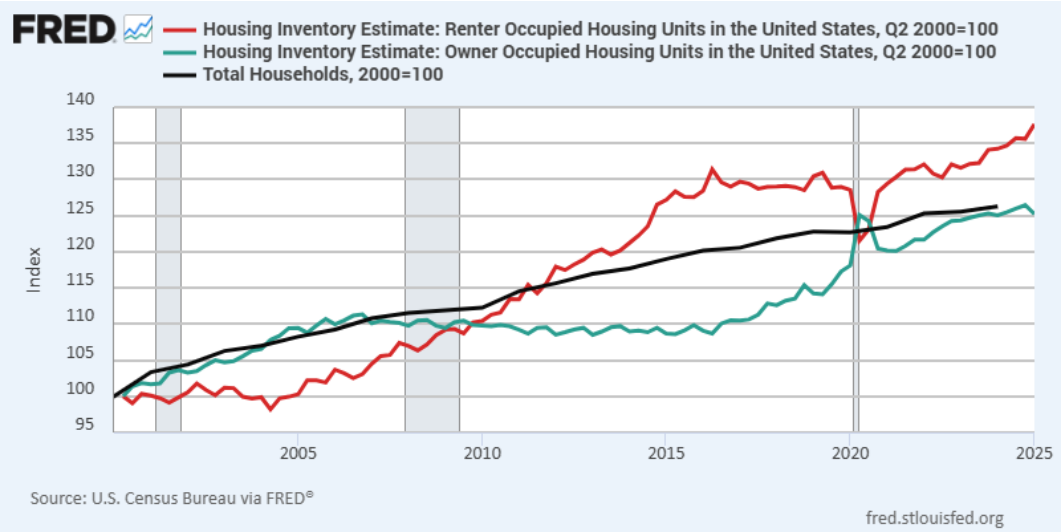
- Demand fundamentals are weak, especially for new homeowners.
- The supply shortage continues to decline.
- The low volume purchase market will continue unless a recession drives down interest rates enough to lead to refinancing of recent higher coupon mortgages.
- Future housing price growth will decline towards historic levels because the recent drivers of overheated growth have subsided.
- Housing prices are already declining in many large cities, and the chance of a moderate recession is rising. This raises the likelihood of larger and broader declines in housing prices.

**Forward-Looking Risks**

- Seasoned discount mortgages are low risk even in stress.
- Recent higher coupon servicing rights and mortgages are very exposed to interest rate risk and FHA-related assets are also exposed to increased credit risk.

For about ten years this century, household growth exceeded the growth in owner-occupied units as shown in Figure 1. By contrast, rental unit growth has exceeded household growth for the past fifteen years. Household growth has markedly slowed over the past generation, but it nevertheless outpaced growth in units by five million total over the last 20 years as shown in Figure 2. This national aggregate shortage undoubtedly includes offsets of excess units in specific locations, so the effective shortfall is probably larger. It is widely viewed that local zoning regulations have restricted new construction and made it more expensive. This persistent shortage and cost barriers have supported growth in real housing prices. The nature of the local zoning problem makes it resistant to national or federal solutions. While national growth is flat, there is meaningful variation across metro areas as population flows between them.

## Figure 1 – Renter Units Have Grown More Over Time




## Figure 2 – Decade-Long Shortage of New Construction

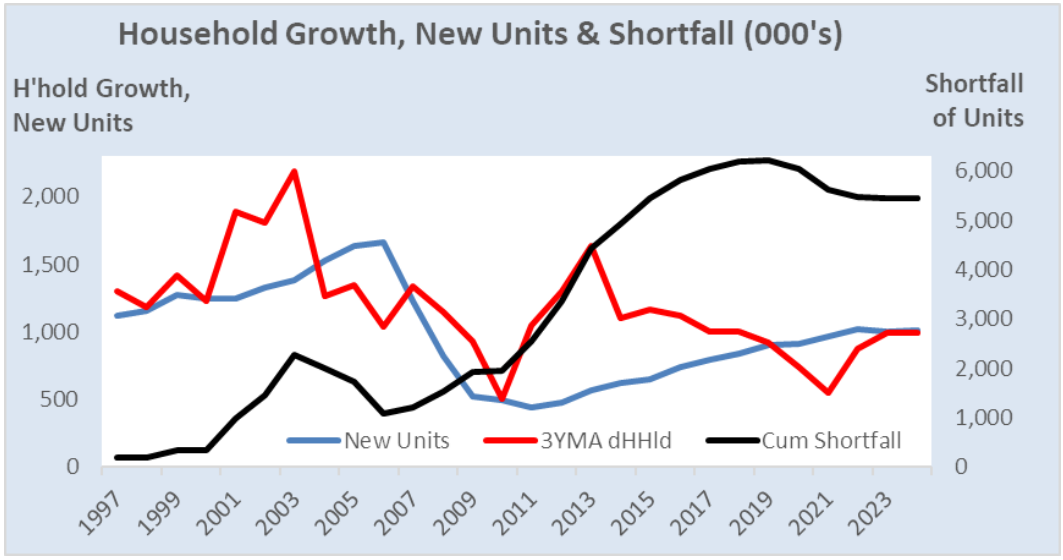
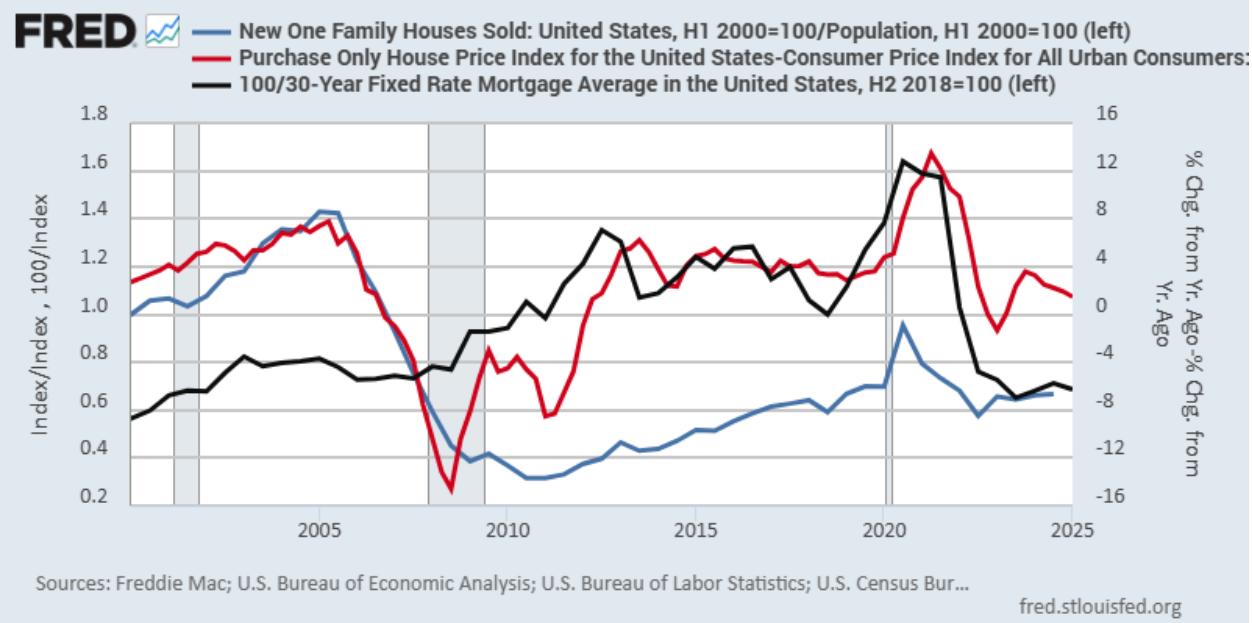


Figure 3 shows the low rate of new construction relative to population for over fifteen years. Accordingly, housing prices grew about 5% annually in real terms since the financial crisis, which is high for an asset whose demand is derived from consumer income that grows about 1% in real terms. The high real return was likely caused by the confluence of factors listed below, but these returns have recently dropped sharply and may now be negative, coinciding with the reversal of these factors:

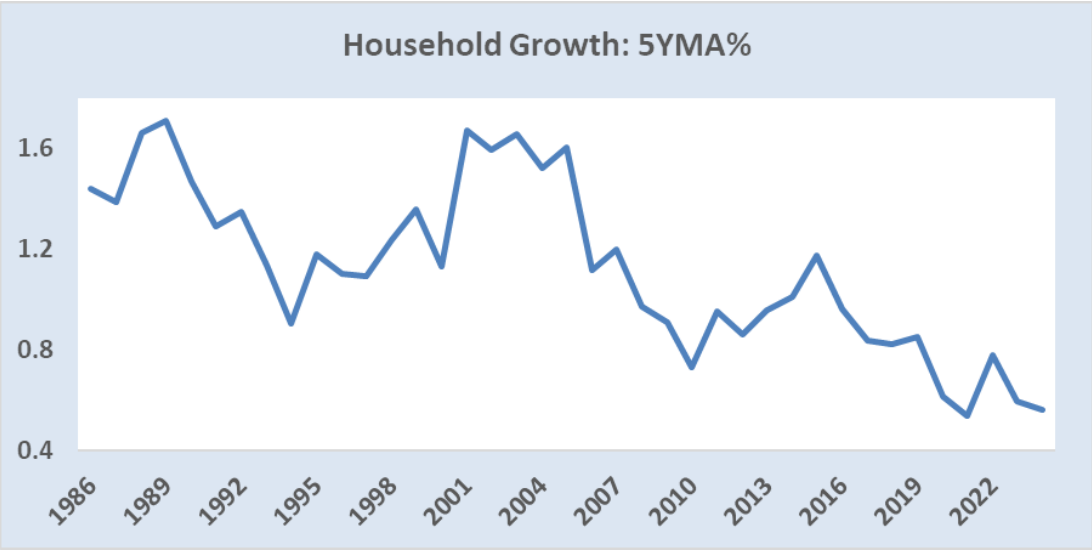
- Persistent unit undersupply is now easing.
- The secular decline in mortgage rates from declining inflation and recessions has sharply reversed.
- The Fed MBS portfolio grew from zero to over $2.5 trillion (about 20% of the entire supply) beginning in 2008, tightening mortgage spreads to Treasury yields. This portfolio has since fallen to $2 trillion.
- Federal transfers to households during COVID ended in 2021, as discussed below.

## Figure 3 – Low Ratio of New Sales to Population and Rising Real Housing Prices



US household growth has declined by two-thirds over the past several decades, suggesting lower future demand growth for housing than in the past. Also, household size is shrinking, so growth would have dropped even more if household size had stayed the same. Two other long-term trends may coincide to measurably reduce the effective demand for homeownership: the financing cost of buying a house and the large income and wealth gap between renters and owners. A third possibility is that causality also goes the other way. In the last 25 years, housing prices have been growing 4%–5% in real terms, interrupted only by the Great Recession. So, it could be that economic stress, or expensive housing, has been keeping young adults in their parents' home longer, delaying new household creation.

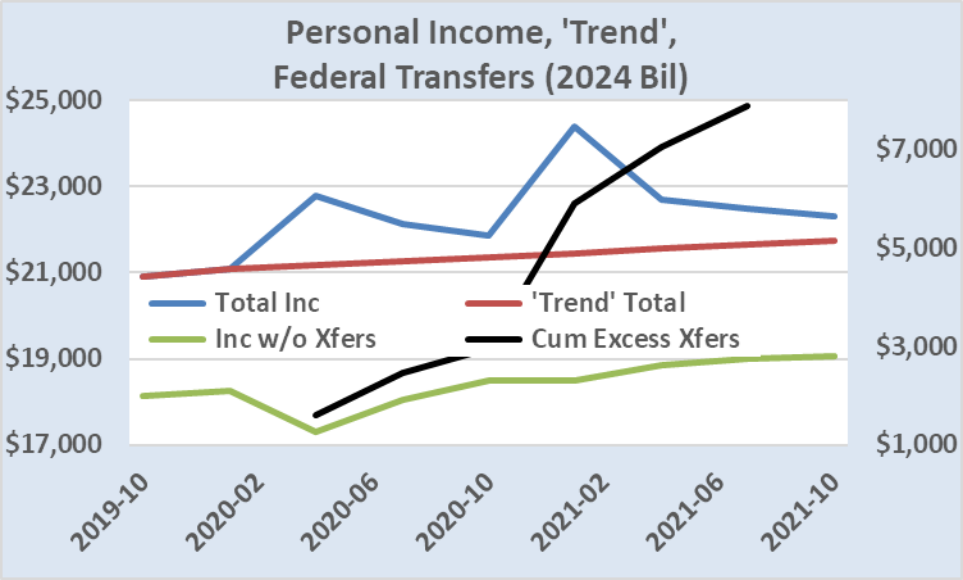
## Figure 4 – Declining Household Growth




The federal response to COVID-19 has likely had a large impact on the recent surge and collapse in real house price growth. National income net of transfers dropped over 5% in one quarter as the economy froze when COVID hit the US. However, the federal response as measured by consumer transfer payments was so large that total personal income actually rose about 8%. Figure 5 shows federal transfers and personal income net of transfers in 2024 dollars. "Trend" income rises about 0.55% per quarter, the 20-year average. The figure also shows the cumulative excess of transfer payments beyond that needed to maintain trended growth in national income. This nearly $8 trillion of extra income was over one-third of annual GDP at the time and likely contributed to the surge in housing prices (and inflation generally) during that period. Demand for homes was also spurred by the historic low in mortgage rates.

Figure 6 shows that transfer payments returned to historic averages after the pandemic, which, while appropriate, probably contributed to a large drop in housing demand and the sharp drop in housing price growth, again coinciding with a sharp rise in mortgage rates.

## Figure 5 – Real National Income and Excess Federal Transfers




## Figure 6 – Trend in Real Income and Share of Transfers of Total Income

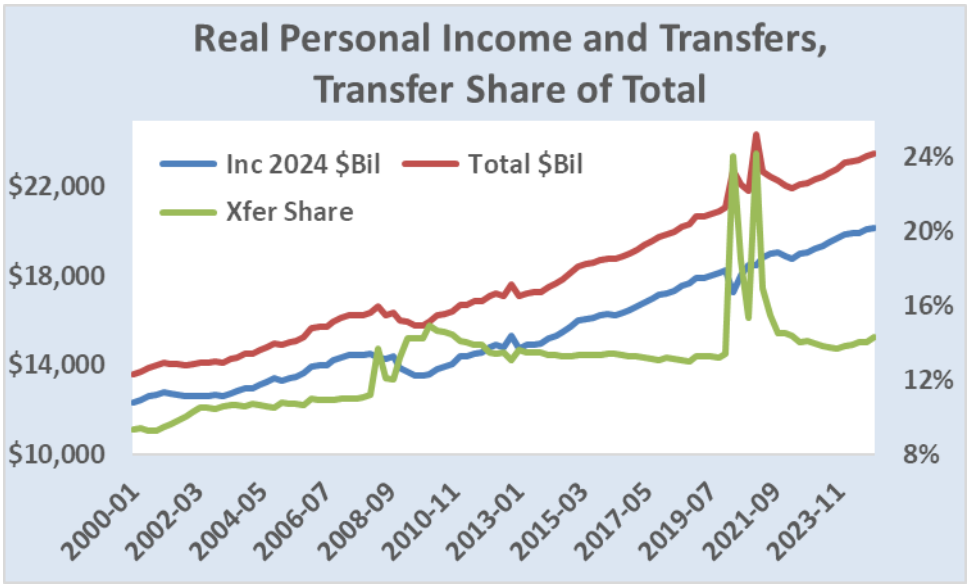
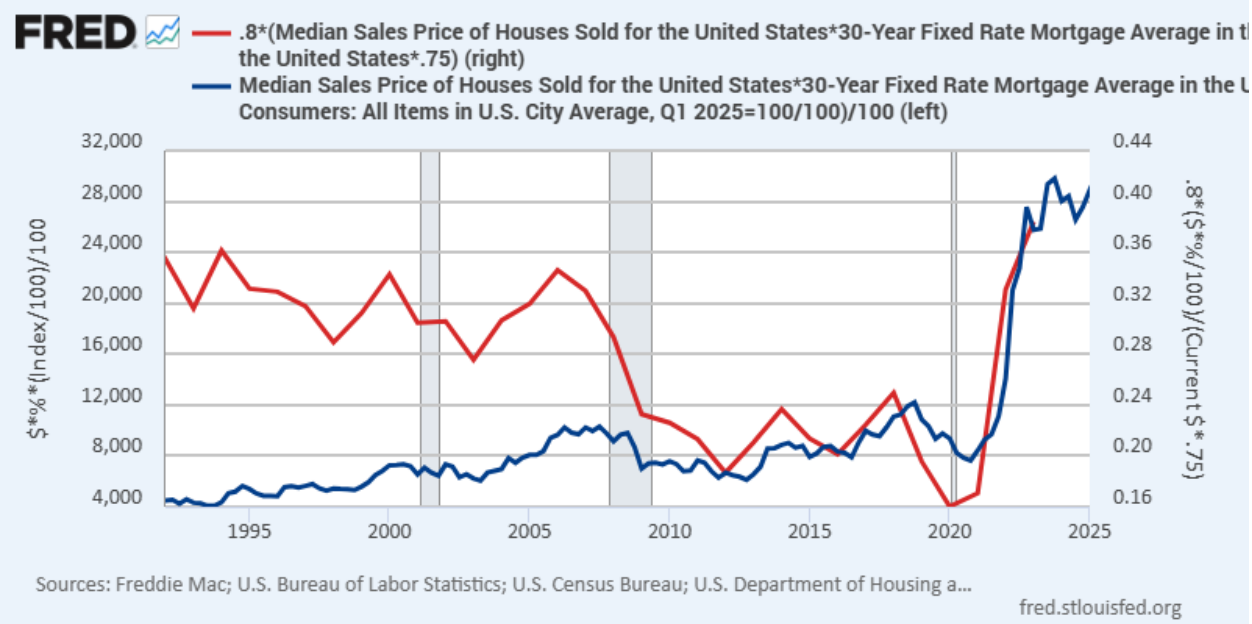


Figure 7 shows the secular decline in home financing cost relative to renter income, followed by the recent rise as housing prices surged and mortgage rates returned from historic lows to more normal levels. We measure affordability with the following assumptions:

- The current average house price for FHA first-time buyers of $325,000 is about 80% of median home value.
- Financing cost is the mortgage rate by date, currently just under 7%.
- Target 40% DTI for affordability, which corresponds to $75,000 in income. About one-third of renters have this income or higher, according to census data.

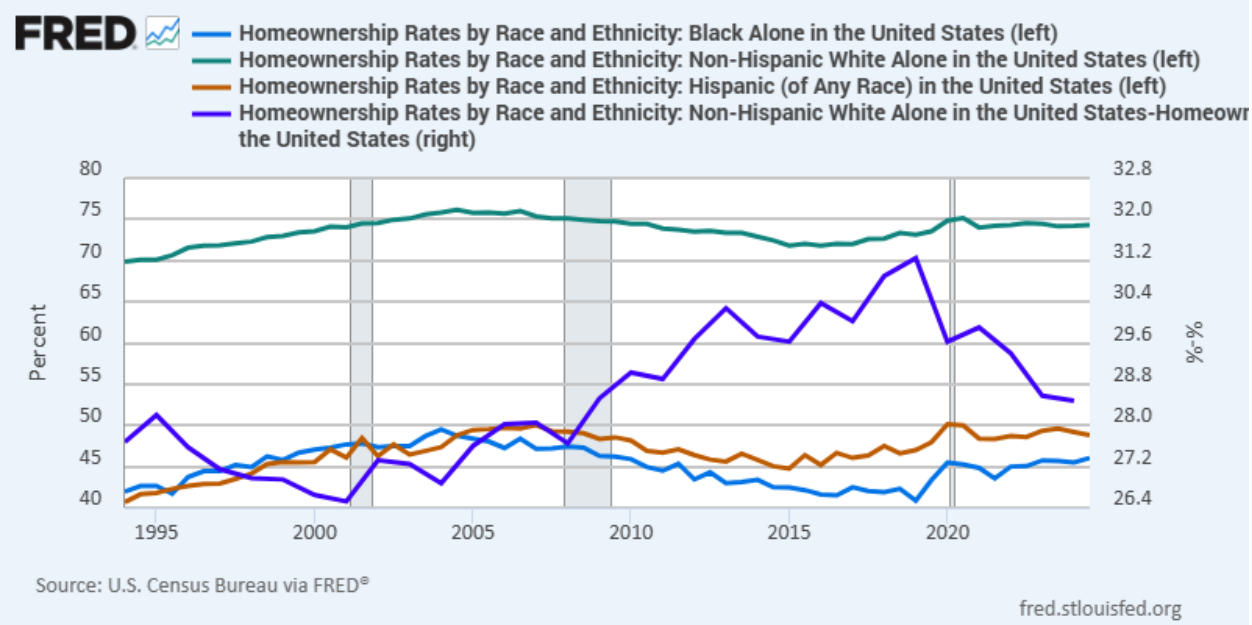
These assumptions will allow some flow of first-time buyers, but the pool of houses and borrowers is much smaller than a few years ago. The payment burden is double what it was recently, and house price growth is now much lower. Risk to home prices is increasing.

## Figure 7 – Surging Real Home Financing Cost and Renter Payment Burden

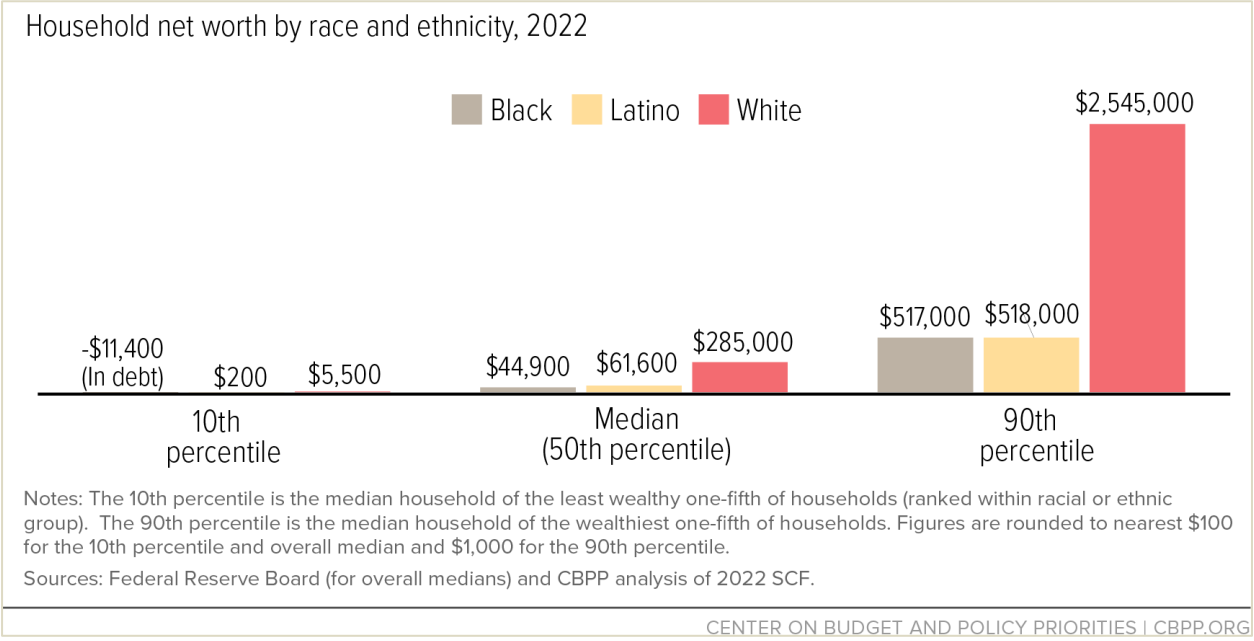



Figures 8 through 10 describe the gaps in wealth, income, and race between owners and renters. These dramatic differences make it unlikely that most renters could meet the current cost of becoming homeowners. FHA is a large source of low down payment financing, but first-time buyers still need $10,000 to $20,000 for down payment and closing costs.

## Figure 8 – The Race Gap in Homeownership Has Not Narrowed in Decades




## Figure 9 – Wealth is Highly Concentrated by Race



## Figure 10 – Wealth is Highly Concentrated by Race

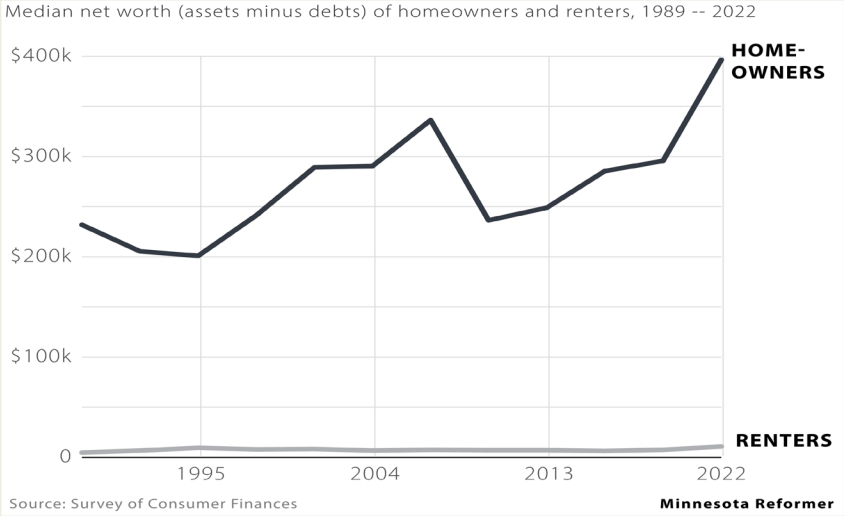
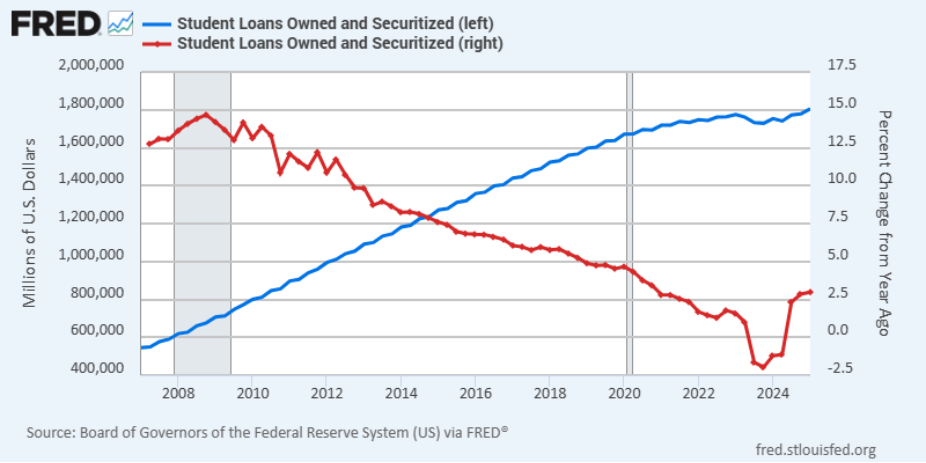



Figure 11 shows the rise in student loan debt over the last 20 years, having reached $1.8 trillion. Predictably, this debt burden is concentrated on young adults, adding to the burden of potential first-time homebuyers. Outside of the brief payment moratorium a few years ago, serious delinquency rates on student loan debt have persistently been around 10%.

## Figure 11 – The Rise of Student Loan Debt




Finally, 10 states have homeowner insurance costs ranging from $250 to $500 per month for moderately priced houses. High risk locations within states can be double.[1]

In summary, it wouldn't be surprising if weakening demand, increasing supply, and higher financing costs combined to weaken housing prices. Figure 11 shows that prices are already falling in several of the largest cities.

[1] https://www.bankrate.com/insurance/homeowners-insurance/states/

## Figure 12 – Large Cities Where Nominal HPA Fell from Above to Below Average

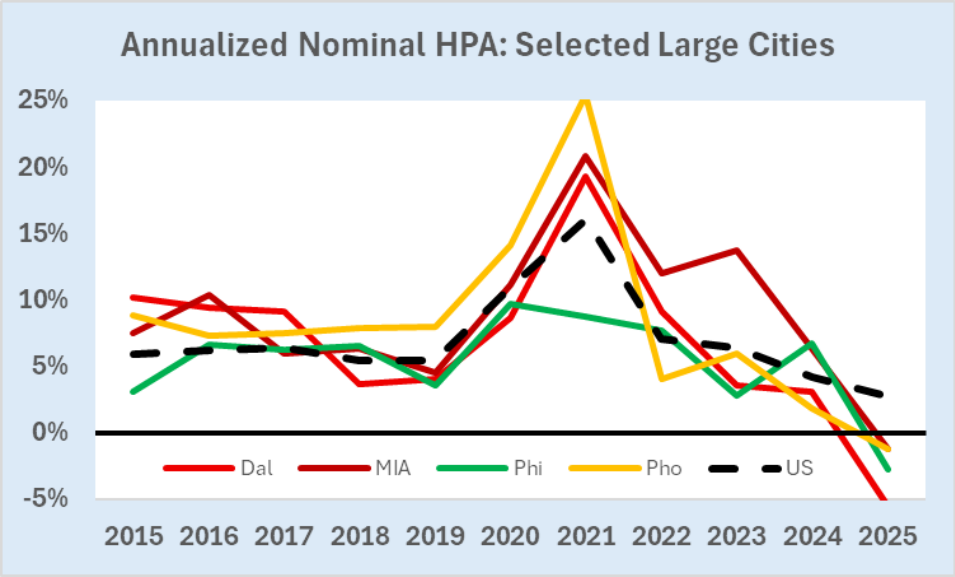



Figure 13 shows that payment burden stress (reflected in debt-to-income ratio) is already driving up delinquencies on new originations, shown most clearly for FHA. This has occurred while employment and national income have grown. This risk is likely to persist or worsen.

## Figure 13 – Rising FHA Delinquencies with Rising Payment Burden

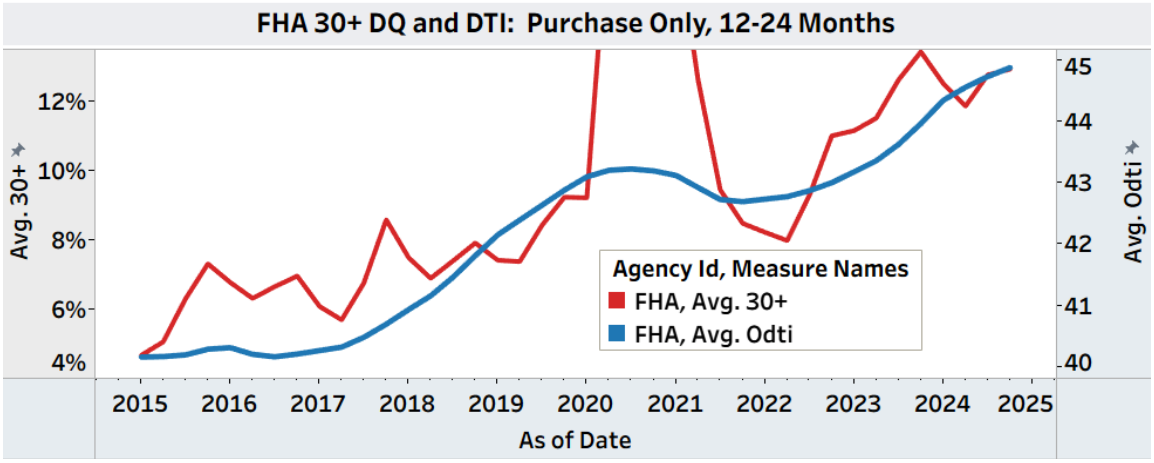
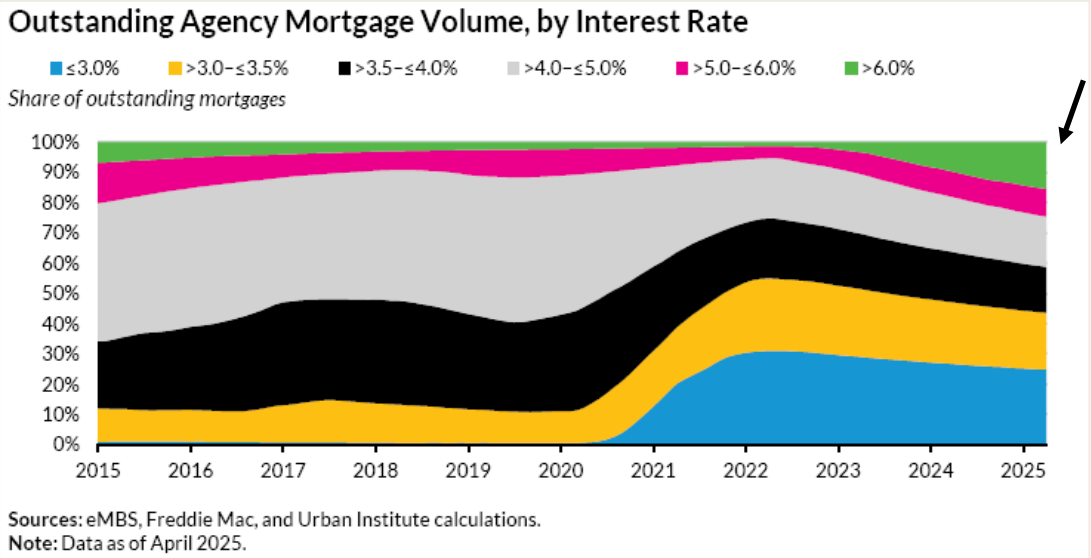



Figure 14 shows that about 80% of outstanding mortgage coupons are below 5%, nearly 2% lower than today's rates. A recession or change in inflation expectations would be needed to drive rates low enough to make some of these mortgages refinanceable. Figure 15 shows historical prepayments for Fannie Mae vintage cohorts currently ranging 5–10 CPR. These speeds seem unlikely to significantly rise soon. Figure 16 shows several years of purchase volume, where 2025 has measurably lower volume. This is likely to continue.

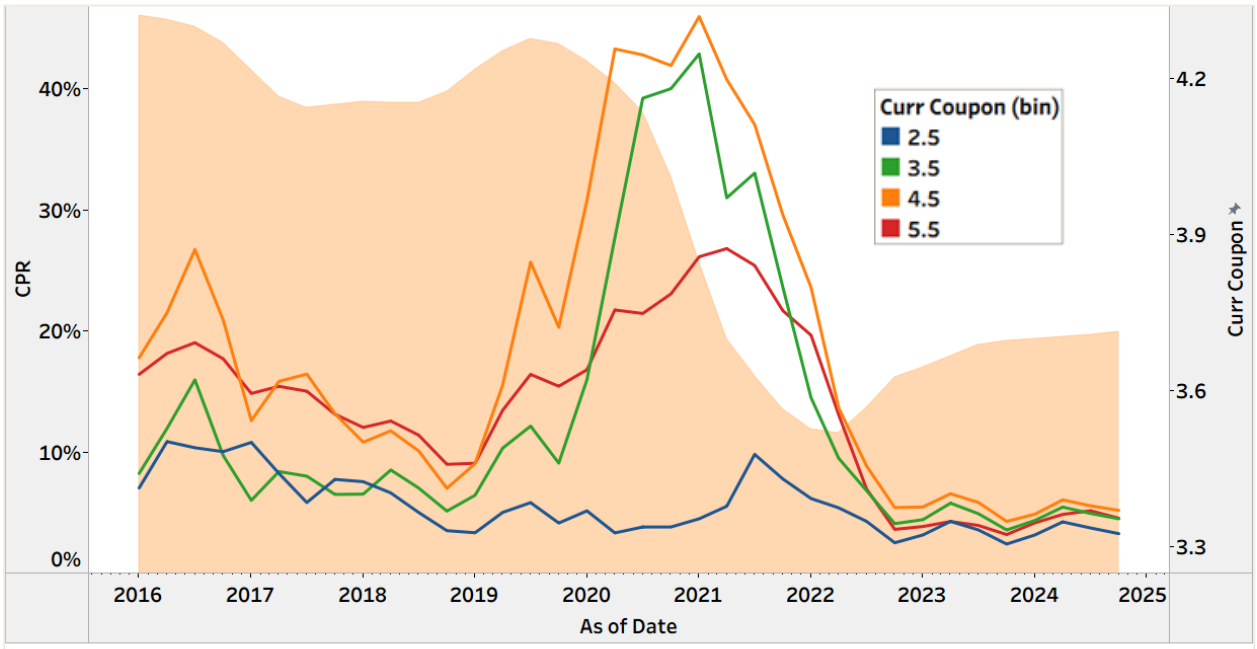
[2] FHFA: https://www.fhfa.gov/data/hpi/datasets?tab=monthly-data

## Figure 14 – Purchase Market into the Future



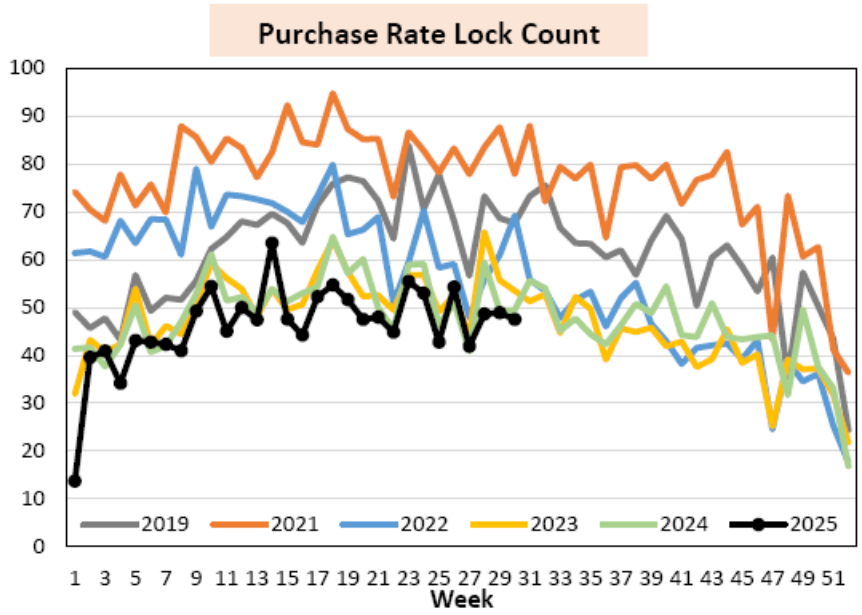

**Sources:** eMBS, Freddie Mac, and Urban Institute calculations.
**Note:** Data as of April 2025.

## Figure 15 – Slow Prepayments for Discount Loans




The trends of AVG([CPR])*11 and average of Curr Coupon for Date As Of Quarter. For pane AVG([CPR])*11: Color shows details about Curr Coupon (bin). The data is filtered on Agency Name, which keeps FNMA. The view is filtered on Date As Of Quarter and Curr Coupon (bin). The Date As Of Quarter filter ranges from 2016 Q1 to 2024 Q4. The Curr Coupon (bin) filter keeps 2.5, 3.5, 4.5 and 5.5.

## Figure 16 – Purchase Volumes Well Below 2019




Source: ICE, Agency MBS and AEI Housing Center, www.AEI.org/housing.

**Recap**

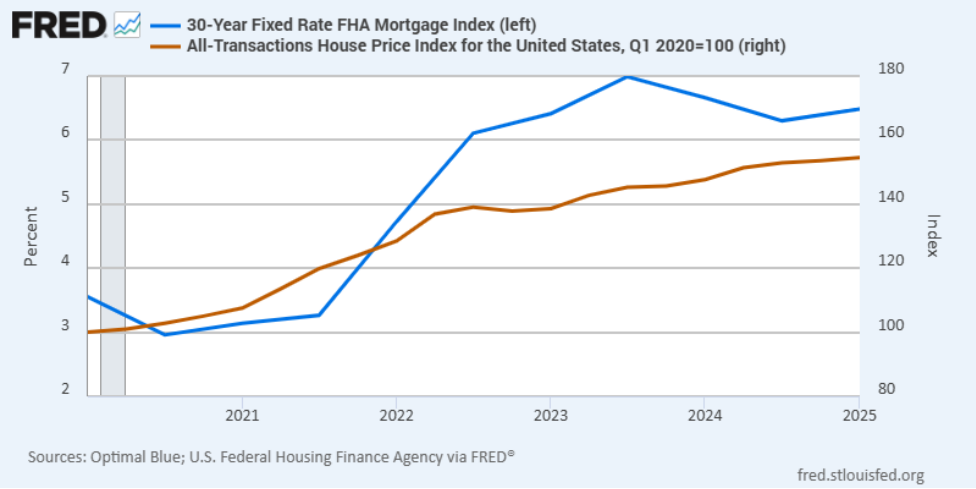
The prior sections describe trends in weakening housing demand and housing prices, moderately expanding supply, and no clear direction to rates absent an unexpected economic shock. We assess forward risks using Monte Carlo and scenario analysis with AD&Co's Kinetics platform. Kinetics combines behavioral and market models with a cash flow engine and market prices to quantify mortgage-related asset values and risk metrics. If the economy continues to be stable at current levels, recent performance will likely continue with low mortgage activity, prepayment rates, and delinquencies. But what if the economy weakens? Housing prices are already falling in many large cities and employment growth is slowing. The most recent data from FHFA shows that housing prices fell slightly. Our updated forecast continues to decline and is essentially flat for the next year or two within a confidence interval.

A recession isn't likely, but it's more likely than in recent years. Risk can be described as sensitivity to the volatility of underlying drivers. In the mortgage space, we explore the dynamics of the cost of owning prepayment risk, credit risk and servicing risk by comparing the value of these risks in a median economic scenario and two stress scenarios.

Both stresses have housing prices falling 10%. The first is one out of our set of 20 probabilistic scenarios, with about a 15% likelihood; it has stable unemployment and slightly rising mortgage rates. The second is a classic recession, with the unemployment rate rising from 4% to 7%, the Fed easing, and mortgage rates falling 150 bps. The recession scenario may be more likely than the one from our scenario grid. These scenarios are much less severe than the great financial crisis and the Fed's severe stress scenario that is applied to regulated financial institutions, and therefore these stress scenarios have a greater chance of occurring.

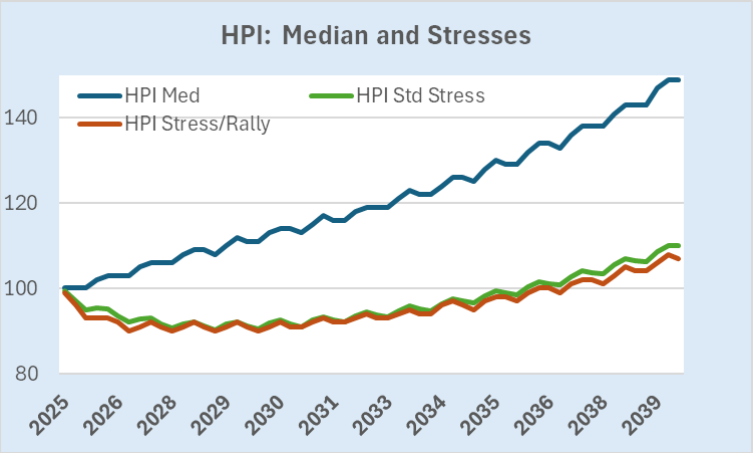
For these scenarios, we quantify FHA credit risk and servicing risk for both FHA and GSE loans. FHA loans are riskier; with average 97 LTV and 690 credit score compared with GSE at 80 LTV and 750 credit score. Mortgage risks are highly time and path dependent, so we investigate these risks by origination year, beginning with 2020. The figure below reminds us of the large increases in both mortgage rates and housing prices in the last few years. Since 2020, mortgage rates have risen 400 bps and housing prices 50%.

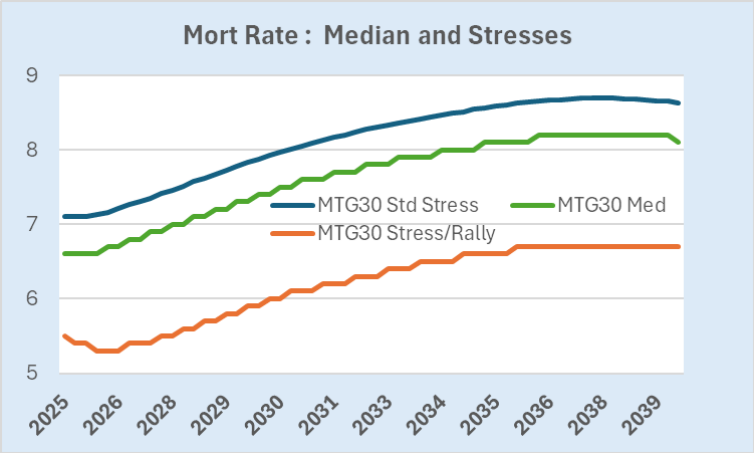
## Figure 17 – Recent Mortgage Rates and Housing Appreciation

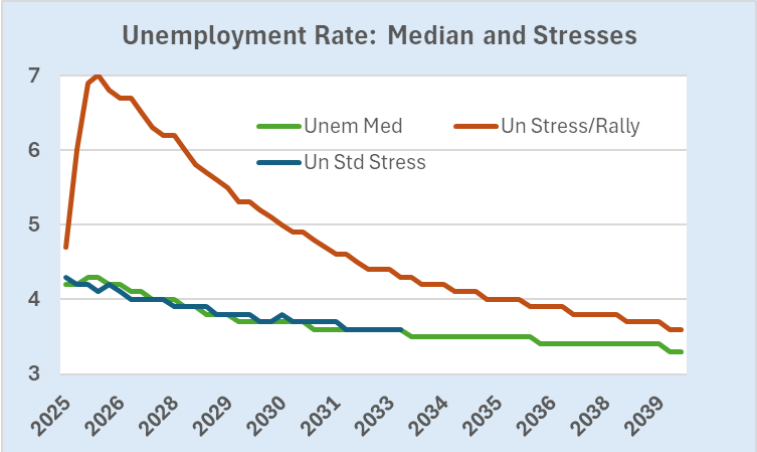


The following charts show key drivers of mortgage risk for the three scenarios under discussion: our median and two stress scenarios for housing prices, mortgage, and unemployment rates. For convenience, we name the stress where rates fall (and bonds rally) the "Stress/Rally," and stress from our scenario grid the "Standard (Std) Stress." It's worth noting that the median scenario is not average risk. It's in the middle of the scenarios but below average risk because risk is asymmetric.

### Economic Scenarios



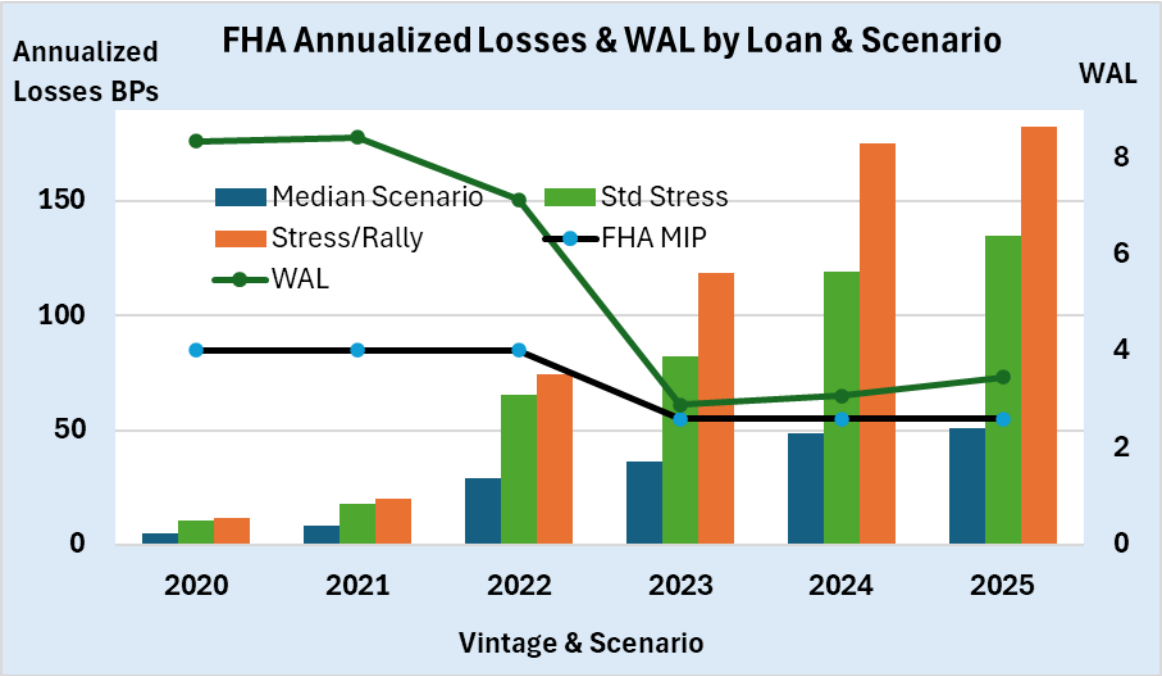
**Credit Risk**

The chart below shows the level and sensitivity of credit risk for typical FHA loans—originated over the last several years that are current today—to the drivers in the stress scenario. The older vintages with lower mortgage rates and more appreciation have much lower credit risk and are much less sensitive to stress. Recent vintages have surging potential losses, and the Stress/Rally scenario has the compound risk of surging losses and surging prepayments, which reduces revenue.

However, FHA also has a significant share of non-current loans, 14% for the more mature vintages before 2024. Further, the 2023 and 2024 vintages are trending worse than the last ten years of vintages. Credit costs for delinquent loans can be triple the cost of current loans or higher. It's possible that these high delinquency rates during a benign economy could sharply rise under stress.

Annualized losses is cumulative losses in basis points divided by WAL; FHA MIP is the FHA program-level mortgage insurance premium. The Stress/Rally scenario has lower absolute losses than the Std Stress, but generates less revenue, because of faster prepayment speeds, and results in higher annualized cost. FHA charges 175 bps insurance premium up front and has a reserve of 10% accrued from several years of positive economics. This reserve is much higher than the targeted reserve of 2%, which led to reducing the annual premium. The 2024 and 2025 vintages of current loans would need a reserve of about 375 bps (125 bps annualized losses * 3.0 WAL) for annual costs above the MIP. These stresses are unlikely to imperil the fund, but stress default rates could exceed 15%. Finally, if recent vintages were roughly 15% delinquent and have triple the losses, then overall vintage costs would go up roughly 30%.

## Figure 18 – The Cost of FHA Credit Risk by Vintage and Scenario



The Stress/Rally scenario assumption of rates quickly falling 150 bps will drive up pass-through bond prices several points. The exact amount depends on bond seasoning and the precise rate path that is assumed.

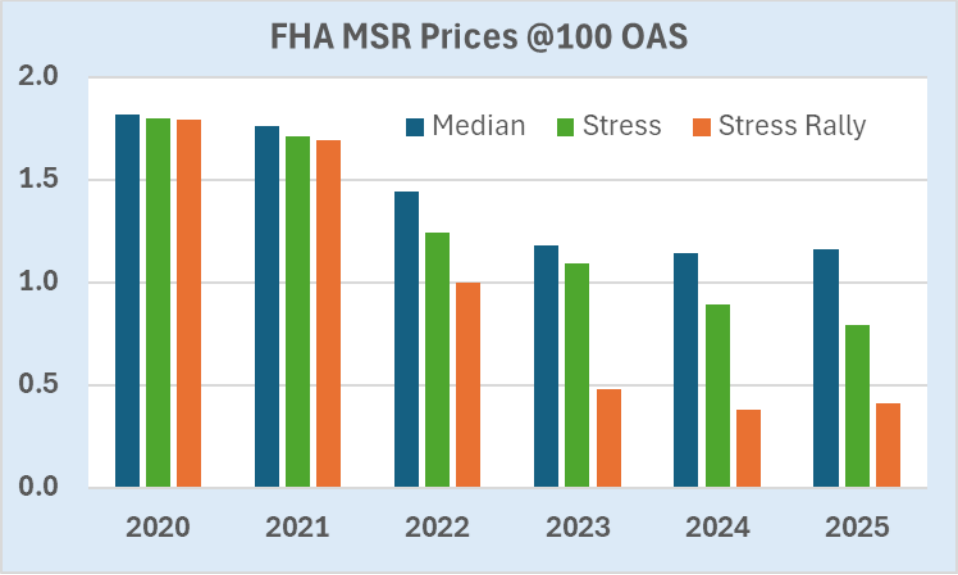
Seasoned GSE loans have much lower credit risk and continue to be insensitive to rate drops in the stress scenario. Newer GSE loan credit costs rise in the stress scenario but are still very low compared to guarantee fees.

**Servicing Risk**

Servicing rights are a derivative of mortgage cash flows and thus more volatile than mortgages. Servicing non-performing loans can cost 10 times more than current loans so MSRs are very sensitive to delinquencies, and thus to underlying creditworthiness and economics. Income is an interest-only strip that is levered to prepayments. We've already shown that mortage value for seasoned discount FHA loans is not sensitive to the stress scenarios, but more recent vintages are.

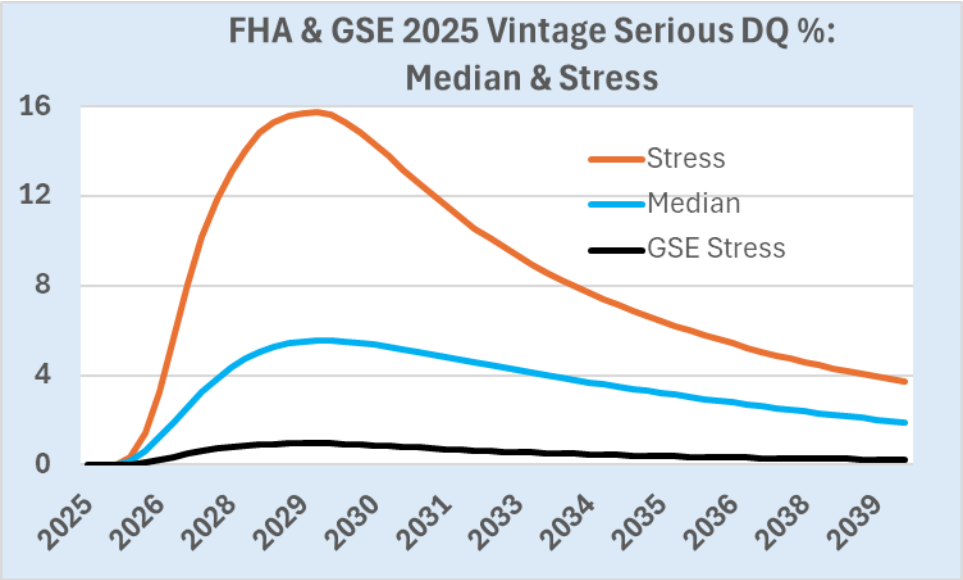
Figure 19 shows MSR prices using approximate market OAS and yields for several FHA vintages. A rough rule of thumb for new issue MSR asset yields is about 10%, which in this market equates to about 100 bp Option-Adjusted Spread. We use OAS to equalize risk across vintages and note rates which can have widely varying "risky" yields. Earlier vintage MSR values are very stable to either stress scenario, but recent vintages lose one-third of their value from housing price stress and two-thirds in the Stress/Rally from credit and interest rate risk. Interest rate risk can be hedged but stressed credit risk must be held as capital. Figures 20 and 21 show two key drivers of MSR dynamics, serious delinquency rates and fee revenue.

## Figure 19 – FHA MSR Prices by Vintage: Median and Stress Scenarios



GSE servicing values are much less sensitive to credit stress, but higher rate MSRs are predictably very sensitive to interest rates declining. GSE serious delinquencies triple in the stress case, but note in Figure 20 that they remain extremely low, which is why GSE credit risk is insensitive in this housing price stress scenario. So, for example, if an economic downturn accompanied by lower mortgage rates is more likely than last year, GSE MSR values for loans near current market mortgage rates have a significant amount of interest rate risk that could be hedged. Figure 21 shows how dramatically prepayments can impact servicing revenue.

## Figure 20 – 2025 Vintage Serious Delinquency Rates




## Figure 21 – FHA MSR Revenue Sensitivity to Prepayments

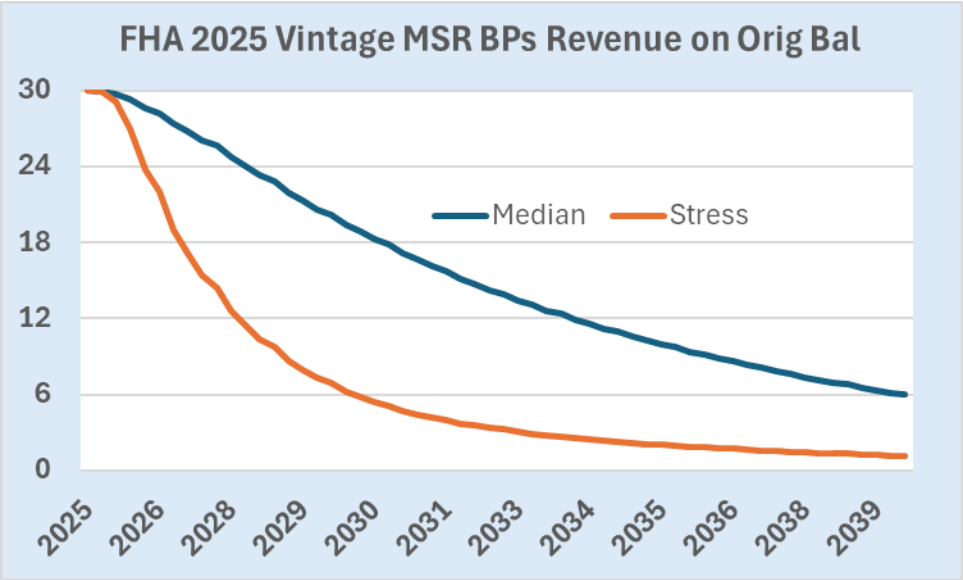
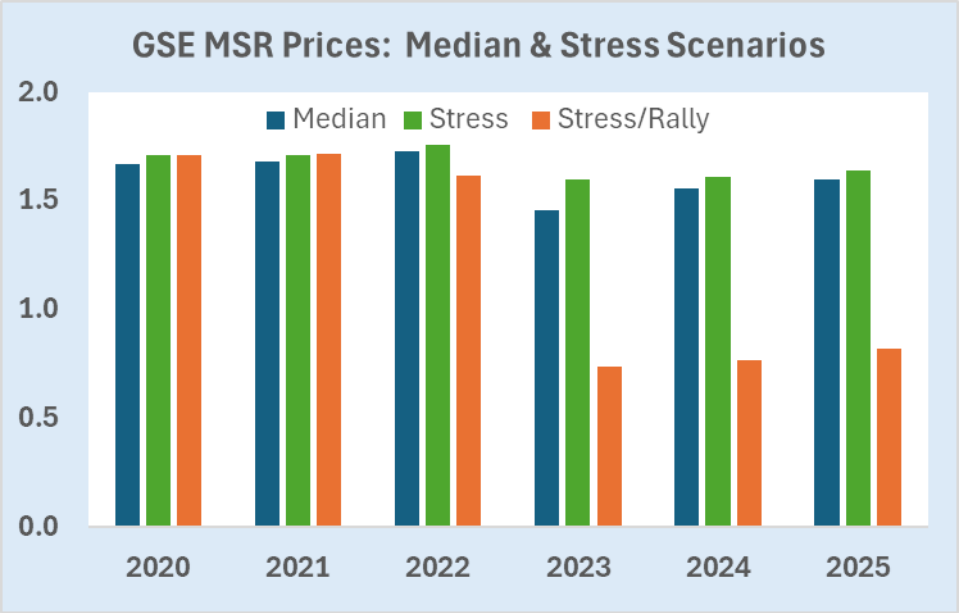


Figure 22 shows that in our standard stress test, where housing prices fall 10% but rates slightly rise, GSE MSR values actually increase slightly. However, they fall dramatically in the Stress/Rally scenario for higher rate recent vintages

## Figure 22 – GSE MSR Prices by Vintage: Median and Stress Scenarios



# CONCLUSION

Demographics are like glaciers—they move slowly and inexorably. In this vein, housing-related demographics are weak, especially for new homebuying based on low household formation and low levels of income wealth among renters. Concurrently, the decade-long supply shortage appears to be easing after a decade of high real returns to housing and the declining growth in households. Mortgage rates are the highest in 20 years and average housing prices have risen 50% in five years. Massive federal COVID-19 stimulus, low mortgage rates, and the supply shortage combined to surge home prices, but these drivers have ended, and housing price growth has already collapsed. Future housing price growth is likely to return to the long-term trend of about 1% growth in real terms, so downside risk is elevated.

Climate risk is a growing problem for housing and housing finance insurance, increasing payment burdens and putting downward pressure on access to financing and housing prices. It's getting worse, but it is yet unclear how bad this will get. What is generally true is that state population growth this century has been highest in the south and west, where risks like hurricanes, fires, floods, and droughts are prevalent. None of these trends are bullish for returns to housing investment or mortgage market volume.

Looking forward, the prior ten years of low mortgage rates and healthy housing appreciation has made seasoned loans low risk and locked the mortgage market into low volume purchase loans for years to come unless something drives down mortgage rates. Recent vintage higher rate mortgage-related assets are very exposed to interest rate risk, especially with the rising likelihood of a moderate recession. Recent vintages with higher credit risk, like FHA or non-QM are also sensitive to weakening market fundamentals.

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ANDREW DAVIDSON & CO

*New York*
65 Bleecker Street, Fifth Floor
New York, NY 10012-2420

*Raleigh*
150 Fayetteville Street, Suite 1030
Raleigh, NC 27601-2957

212.274.9075
support@ad-co.com
www.ad-co.com